AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1-11. (Canceled).

12. (Currently amended) A method of downconverting a first communication signal at a first frequency into a second communication signal at a second frequency that is lower than the first frequency, comprising:

providing an oscillator signal having a third frequency that is lower than the first frequency;

producing in response to the oscillator signal a sampling pulse signal having digital pulses for use in sampling the first communication signal, wherein adjacent pulses of the sampling pulse signal are separated by an amount of time that corresponds to a predetermined number of cycles of the first communication signal and wherein said amount of time is greater than an amount of time required for completion of said predetermined number of cycles of the first communication signal;

using the pulses of the sampling pulse signal to sample selected phases of the first communication signal, including using a first pulse of the sampling pulse signal to sample a first phase of a first cycle of the first communication signal and using a second pulse of the sampling pulse signal to sample a second phase of a second cycle of the first communication signal in which said first and second pulses are adjacent one another in the sampling pulse signal, wherein said second phase is a different phase than said first phase,

and wherein said second cycle follows said first cycle by a number of cycles of the first communication signal equal to said predetermined number; and

using the sampled phases to produce the second communication signal.

13. (Original) The method of Claim 12, wherein the first communication signal is an RF communication signal.

14. (Canceled).

15-43. (Canceled).

44. (Currently amended) The method of Claim 4312, wherein said first-mentioned using step includes using a delayed version of said first pulse to sample said first phase of said second cycle.

45. (Currently amended) The method of Claim 4312, wherein said first-mentioned using step includes using a third pulse of the sampling pulse signal to sample said first phase of a third cycle of the first communication signal, and wherein said third cycle follows said second cycle.

46. (Original) The method of Claim 45, wherein said third cycle follows said first cycle by a number of cycles of the first communication signal that is a multiple of said predetermined number.

47. (Original) The method of Claim 46, wherein said first-mentioned using step includes using a delayed version of said first pulse to sample said first phase of said second cycle.

48. (Original) The method of Claim 45, wherein said first-mentioned using step includes using a delayed version of said first pulse to sample said first phase of said second cycle.

49. (Original) The method of Claim 12, wherein said step of using pulses includes using a first pulse of the sampling pulse signal and a plurality of delayed versions of said first pulse to sample selected phases of the first communication signal.

50. (Canceled).

51. (Currently amended) A method of downconverting a first communication signal at a first frequency into a second communication signal at a second frequency that is lower than the first frequency, comprising:

sampling a plurality of phases of each of at least two consecutive cycles of the first communication signal, ~~The method of Claim 37,~~ wherein said sampling step includes normally activating a plurality of sampling switches in a first temporal order to sample said plurality of phases, and providing said filter function by activating said plurality of switches in a second temporal order that differs from said first temporal order; and

combining the sampled phases to provide a filter function and produce the second communication signal.

Please add the following new claims:

52. (New) An apparatus for downconverting a first communication signal at a first frequency into a second communication signal at a second frequency that is lower than the first frequency, comprising:

an oscillator for generating a signal having a third frequency that is lower than the first frequency;

circuitry for producing in response to the oscillator signal a sampling pulse signal having digital pulses for use in sampling the first communication signal, wherein adjacent pulses of the sampling pulse signal are separated by an amount of time that corresponds to a predetermined number of cycles of the first communication signal and wherein said amount of time is greater than an amount of time required for completion of said predetermined number of cycles of the first communication signal;

circuitry for using the pulses of the sampling pulse signal to sample selected phases of the first communication signal, including using a first pulse of the sampling pulse signal to sample a first phase of a first cycle of the first communication signal and using a second pulse of the sampling pulse signal to sample a second phase of a second cycle of the first communication signal in which said first and second pulses are adjacent one another in the sampling pulse signal, wherein said second phase is a different phase than said first phase, and wherein said second cycle follows said first cycle by a number of cycles of the first communication signal equal to said predetermined number; and

circuitry for using the sampled phases to produce the second communication signal.

53. (New) The apparatus of Claim 52, wherein said circuitry for using the pulses further includes circuitry for using a delayed version of said first pulse to sample said first phase of said second cycle.

54. (New) The apparatus of Claim 52, wherein said circuitry for using the pulses further includes circuitry for using a third pulse of the sampling pulse signal to sample said first phase of a third cycle of the first communication signal, and wherein said third cycle follows said second cycle.

55. (New) The apparatus of Claim 54, wherein said third cycle follows said first cycle by a number of cycles of the first communication signal that is a multiple of said predetermined number.

56. (New) The apparatus of Claim 55, wherein said circuitry for using the pulses further includes circuitry for using a delayed version of said first pulse to sample said first phase of said second cycle.

57. (New) The apparatus of Claim 54, wherein said circuitry for using the pulses further includes circuitry for using a delayed version of said first pulse to sample said first phase of said second cycle.

58. (New) An apparatus for downconverting a first communication signal at a first frequency into a second communication signal at a second frequency that is lower than the first frequency, comprising:

circuitry for sampling a plurality of phases of each of at least two consecutive cycles of the first communication signal, wherein said sampling includes normally activating a plurality of sampling switches in a first temporal order to sample said plurality of phases, and providing said filter function by activating said plurality of switches in a second temporal order that differs from said first temporal order; and

circuitry for combining the sampled phases to provide a filter function and produce the second communication signal.

59. (New) The apparatus of Claim 52, wherein said circuitry for producing comprises a sampler, said sampler including a plurality of sampling switches coupled to an input for sampling the first communication signal.

60. (New) The apparatus of Claim 52, wherein said circuitry for producing comprises a sampler operable for sampling a plurality of phases of all cycles of the first communication signal.

61. (New) The apparatus of Claim 59, including a digital pulse generator coupled to said sampler for producing a sampling pulse signal having a plurality of digital pulses, each of said pulses having a pulse width that is approximately equal to but wider than a half period of the first communication signal, said sampler responsive to said sampling pulse signal for sampling the first communication signal.

62. (New) The apparatus of Claim 60, including a digital pulse generator coupled to said sampler for producing a sampling pulse signal having a plurality of digital pulses, each of said pulses having a pulse width that is approximately equal to but wider than a half period of the first communication signal, said sampler responsive to said sampling pulse signal for sampling the first communication signal.

63. (New) The apparatus of Claim 61, wherein said sampler has an input for receiving one of said digital pulses and a plurality of delayed versions of said one digital

pulse, said sampler responsive to said one digital pulse for sampling one of the phases of said consecutive cycles, and said sampler responsive to said delayed versions of said one pulse for sampling other phases of said consecutive cycles.

64. (New) The apparatus of Claim 62, wherein said sampler has an input for receiving one of said digital pulses and a plurality of delayed versions of said one digital pulse, said sampler responsive to said one digital pulse for sampling one of the phases of said consecutive cycles, and said sampler responsive to said delayed versions of said one pulse for sampling other phases of said consecutive cycles.

65. (New) The apparatus of Claim 63, further including a delay element structure coupled to said digital pulse generator and said sampler for producing the delayed versions of said one pulse and providing the delayed versions to said sampler input.

66. (New) The apparatus of Claim 64, further including a delay element structure coupled to said digital pulse generator and said sampler for producing the delayed versions of said one pulse and providing the delayed versions to said sampler input.

67. (New) The apparatus of Claim 63, wherein sand sampler includes a plurality of sampling switches coupled to said first-mentioned input and to said sampler input for respectively sampling phases of said consecutive cycles of the first communication signal in response to said one pulse and said delayed versions of said one pulse.

68. (New) The apparatus of Claim 64, wherein sand sampler includes a plurality of sampling switches coupled to said first-mentioned input and to said sampler input for respectively sampling phases of said consecutive cycles of the first communication signal in response to said one pulse and said delayed versions of said one pulse.

69. (New) The apparatus of Claim 52, wherein the first communication signal is an RF communication signal.

70. (New) The apparatus of Claim 52, wherein the circuitry for using the sampled phases includes filters respectively for receiving selected ones of the sampled phases.